

The Examiner has the burden of making a prima facie case of obviousness. The Examiner has not carried this burden in this case. The Examiner cannot review the prior art and use a combination of elements from non-analogous sources, in a manner that reconstructs the Applicant's invention only with the benefit of hindsight. There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself.¹ Furthermore, in attempting to make the prima facie case for obvious under 35 U.S.C. 103 (a), the Examiner has chosen among individual parts of assorted prior art references to reconstruct applicant's invention which is impermissible.² The Examiner in her reliance on the teachings of several prior art references, has not looked at the invention as a whole but only the various pieces or features of the invention.³

CLAIMS 1-3, 6 AND 7, 9

Applicant first argues that the Lundahl reference is non-analogous prior art. Lundahl discloses a structure for cutting and severing hay, grasses and stalks. Applicant teaches a method and apparatus for to engage and lacerate stalks. The intended result and improvement sought by Applicant is to specifically avoid cutting and severing corn

¹ See In re Octiker, 977 F.2d 1443, 24 USPQ 2d 1443, 1446 (Fed. Cir. 1992)

² See Akzo N.V. v. United States Int'l Trade Comm'n, 1 USPQ 2d 1241, 1246 (Fed. Cir. 1986), *cert. denied*, 482 U.S. 909 (1987) (stating that prior art references before the tribunal must be read as a whole and consideration must be given where the references diverge and teach away from the claimed invention. . . . [m]oreover, appellants cannot pick and choose among individual parts of assorted prior art references "as a mosaic to recreate a facsimile of the claimed invention."

³ See Ex parte Hiyamizu, 10 USPQ 2d 1393, 1394-95 (B.P.A.I. 1988) (hold that under 35 U.S.C. 103 where the examiner has relied on the teachings of several references, the test is whether or not the references viewed individually and collectively would have suggested the claimed invention to the person possessing ordinary skill in the art. It is to be noted, however, that citing references which merely indicate that isolated elements and/or features recited in the claims are known is not a sufficient basis for concluding that the combination of claimed elements would have been obvious. . . . Furthermore, it is well settled that where the claimed invention solves a problem, the discovery of the source of the problem and its solution are considered to be part of the "invention as a whole")

stalks. The Lundahl prior art cited by the examiner is not applicable can be distinguished because it teaches that a single knife like blade is to be rotated against the crop to be cut; Lundahl does not teach using the blade or edge with an opposing knife blade or edge for cutting the crop as found in the present art. Furthermore, because of the cost of adding a layer of hardened material to a long, straight knife edge such as stalk roll, in comparison to the Lundahl knife blade, it would not necessarily be obvious to having ordinary skill in the art to add the hardened material.

The Russell reference discloses state of the art technology for ear corn pickers versus the application to modern corn heads as found in the present art. Russell teaches an arrangement of "cutter" stalk rolls that are to be mounted in an opposing and vertically offset manner. To be operable as cutting or stalk roll, Russell requires pressure resisting bars 80 mounted to the stalk rolls in combination with angle bars 76 to produce the cutting of the stalk. Additionally, Russell teaches a set of cutting stalk rolls which are both offset in relation to each other while the angle bars 76 are also intermeshing. (See Russell at Fig. 4) Furthermore as shown at Fig. 4 of Russell, cutting and severing the corn stalk to harvest the corn ears from the corn plant is taught. Additionally, Russell in combination with Lundahl fails to teach a stalk roll that penetrates and lacerates the corn stalk without cutting or severing the stalk.

The combination of Russell and Lundahl would not teach a functioning penetrating stalk that works without a pressure resisting bar 80 as taught by the present art. It has frequently been held that the omission of a part or constituent with its function is not a matter of invention but where a part or a constituent is omitted, without sacrifice of function, invention has frequently been found.⁴

⁴ See Ex parte Briod, 41 USPQ 41, 42 (Pat. Off. Bd. App. 1938)

CLAIMS 4 & 5

Cited prior art Calmer teaches opposing parallel stalk rolls orientated in a knife-to-knife arrangement. Cited prior art Russell teaches off-set (non-parallel) stalk rolls having cutting edges 76, at 90 degree angles to each other, opposed by pressure resisting bars 80. The combination of Calmer and Russell, in view of Lundahl, do not teach or enable Applicant's hardened, opposing parallel stalk rolls with intermeshing fluted knife edges, without Russell's pressure resisting bar 80, subject of this patent application as found at Fig. 16. See Applicant's newly submitted claims 21-33 for further definition and explanation.

CLAIMS 8 & 10, CLAIMS 11, 12 and 15-19

Sutton teaches a knife-to-knife stalk roll operation requiring a flat pressure surface (49) to cut the surface of the stalk. Sutton teaches a knife non-complimentary knife angle that leads with a long edge. Sutton does not teach varying the distance between the stalk roll edges. Sutton in combination with Lundahl The Examiner has not cited wherein the reference Sutton it is taught that the radius of the opposing flutes surfaces (45) is reduced in discrete increments along the stalk roll (40), as per Applicant's claim 8. Applicant would argue that Sutton is silent on changing or modifying the radius of the opposing surfaces along the stalk roll (40). Applicant disagrees with the description of Sutton provided by the Examiner for the relationship of the leading edge (49) and the trailing edge (48) to the direction of rotation of the stalk rolls (40).

Furthermore, Sutton discloses a stalk roll wherein the radius of the leading edge of the flute (45) is greater than the trailing edge of the flute (45). Sutton teaches a knife flute edge directly opposite in orientation to that taught and claimed by Applicant. See Applicant figures 13B-B, 14B-B, and 15B-B. Additionally, Sutton provides no teaching or

suggestion for Applicant's invention having intermeshing flute with knife edges with a leading edge radius less than the trailing edge radius found at Figure 16.

CLAIMS 13 and 14

The Calmer is silent as to whether the knife edges are hardened. The knife edge angles as shown are opposite that shown by Sutton. The combination of Calmer, Sutton and Lundahl, however does not teach Applicant's invention as shown in Figure 16 of the present patent application. See Applicant's new claims 26-32.

CLAIM 20

The Examiner has rejected Applicant's method claim 20 as anticipated by the cited prior art Sutton. Applicant argues that Sutton does not teach penetration and laceration of the corn plant stalk for the purpose of stalk deterioration and improved detachment of feed grain ears without severing the corn plant stalk. Sutton instead teaches using the combination of cutting stalk rolls 40 and stripper plates 30 to sever ears of sweet corn from the corn plant stalk. As taught by Sutton, the ears of corn are "sweet corn" ears which are green or alive when cut. By contrast, the present art is for dry or feed grain corn wherein the stalk is dying or dead. The deteriorating condition of the corn plant stalk of the present art presents a stalk with different attributes than a green stalk; the green stalk although being stronger is also firmer thereby providing opposition to the stalk roll edge thus improving the slicing or cutting effect of the cutting stalk rolls 40.

In contrast, the present art is drawn to feed grain with a dry or deteriorated stalk. Because the Sutton reference does not disclose or discuss application to feed grain corn plant stalks, the Sutton reference does not enable those practiced in the arts to practice the present art. "[E]ven if the claimed invention is disclosed in a printed publication, that disclosure will not suffice as prior art if it was not enabling." Helifix Ltd. v. Blok-Lok, Ltd., 54 USPQ 2d 1299, 1304 (Fed. Cir. 2000) (quoting *Donohoe*, 766 F.2d at 533, 226

CLAIMS LISTING

1. (Currently amended) An improved separation element of a corn head row unit comprising:
 - a. a source of power for rotation,
 - b. at least two opposing stalk rolls connected to said power source,
 - c. said stalk rolls having at least one flute,
 - d. said flute having at least one penetration point; and,wherein said penetration point is composed of hardened material.
2. (Currently amended) An improved separation element of a corn head row unit comprising:
 - a. a source of power for rotation,
 - b. at least two opposing stalk rolls connected to said power source,
 - c. said stalk rolls having at least one flute,
 - d. said flute having a knife edge; and,wherein said entire knife edge is composed of hardened material.
3. (Previously Presented) The separation element of said corn head row unit according to claim 2 wherein the knife edge has a predetermined surface slope.
4. (Previously Presented) The separation element of said corn head row unit according to claim 3 wherein the knife edges have a forward slope relative to the direction of rotation of each of said stalk rolls.
5. (Previously Presented) The separation element of said corn head row unit according to claim 4 wherein the knife edges of opposing flutes have a predetermined surface slope and the angle of said slopes of opposing flutes are identical.
6. (Previously Presented) The separation element of said corn head row unit according to claim 2 wherein the opposing flutes are tapered.
7. (Previously Presented) The separation element of said corn head row unit according to claim 2 wherein the opposing flutes intermesh.

8. (Previously Presented) The separation element of said corn head row unit according to claim 2 wherein the radius of the opposing flute surfaces is reduced in discrete increments along the length of the stalk roll.
9. (Previously Presented) The separation element of said corn head row unit according to claim 2 wherein the opposing flutes surfaces have a plurality of radii along the length of the stalk roll.
10. (Previously Presented) The separation element of said corn head row unit according to claim 2 wherein the radius of the leading edge of the flute is less than the trailing edge of the flute in relation to the direction of rotation of the stalk roll.
11. (Currently Amended) An improved separation element of a corn head row unit comprising:
 - a. a source of power for rotation,
 - b. at least two opposing stalk rolls connected to said power source,
 - c. each of said stalk rolls having at least one flute wherein the flutes are opposite each other,
 - d. said flutes having a knife edge; and,
 - e. said entire knife edge is composed of hardened material.
12. (Previously Presented) The separation element of said corn head row unit according to claim 11 wherein the distance between said opposing flutes decreases along the length of said stalk rolls.
13. (Previously Presented) The separation element of said corn head row unit according to claim 12 wherein the knife edges have a forward slope in relation to the direction of rotation of said stalk rolls.
14. (Previously Presented) The separation element of said corn head row unit according to claim 13 wherein the knife edge has a predetermined surface slope per stalk roll and said the angles of said slopes are identical.

15. (Previously Presented) The separation element of said corn head row unit according to claim 11 wherein the radius of the opposing flute surfaces is reduced in discrete increments along the length of the stalk roll.
16. (Previously Presented) The separation element of said corn head row unit according to claim 11 wherein the opposing flutes surfaces have a plurality of radii along the length of the stalk roll.
17. (Previously Presented) The separation element of said corn head row unit according to claim 11 wherein the radius of the leading edge of the flute is less than the trailing edge of the flute in relation to the direction of rotation of the stalk roll.
18. (Previously Presented) The separation element of said corn head row unit according to claim 11 wherein the opposing flutes are substantially in the shape of a trapezoid.
19. (Previously Presented) The separation element of said corn head row unit according to claim 11 wherein a substantially trapezoidal shaped void created is between the opposing flutes when opposite each.
20. (Currently Amended) An improved method of engaging corn plants with a corn head row unit comprising the steps of:
 - a. engaging the corn plant with a plurality of rotational elements,
 - b. pinching the corn plant between said rotational elements,
 - c. penetrating the corn plant stalk with said rotational elements a pre-determined penetration depth, wherein the pre-determined penetration depth of each of said rotational elements is less than half the diameter of the corn plant stalk,
 - d. pulling the corn plant stalk with the rotational elements,
 - e. said penetrating, pinching and pulling steps repeatedly lacerating the corn plant stalk along its length and width; and,
 - f. separating the corn plant ear from the corn plant stalk and husk.

21. (New) An improved separation element of a corn head row unit comprising:
 - a. a source of power for rotation,
 - b. at least two opposing and parallel stalk rolls connected to said power source,
 - c. said stalk rolls having at least one flute,
 - d. said flute having a knife edge; and,wherein said entire knife edge is composed of hardened material.
22. (New) The separation element of said corn head row unit according to claim 21 wherein the knife edge has a predetermined surface slope.
23. (New) The separation element of said corn head row unit according to claim 22 wherein the knife edges have a forward slope relative to the direction of rotation of each of said stalk rolls.
24. (New) The separation element of said corn head row unit according to claim 23 wherein the knife edges of opposing flutes have a predetermined surface slope and the angle of said slopes of opposing flutes are identical.
25. (New) The separation element of said corn head row unit according to claim 22 wherein the opposing flutes are tapered along the length of the stalk roll.
26. (New) The separation element of said corn head row unit according to claim 22 wherein the opposing flutes intermesh.
27. (New) The separation element of said corn head row unit according to claim 25 wherein the radius of the opposing flute surfaces is reduced in discrete increments along the length of the stalk roll.
28. (New) The separation element of said corn head row unit according to claim 26 wherein the opposing flutes surfaces have a plurality of radii along the length of the stalk roll.
29. (New) The separation element of said corn head row unit according to claim 26 wherein the opposing flutes edges are tapered to decrease the width of the gap between the opposing flutes edges along the length of the stalk roll.

30. (New) The separation element of said corn head row unit according to claim 29 wherein the number of opposing flutes edges increases along the length of said stalk roll from the front to the posterior of said stalk roll.
31. (New) The separation element of said corn head row unit according to claim 22 wherein opposing stalk roll knife edges are directly opposite.
32. (New) The separation element of said corn head row unit according to claim 31 wherein the opposing flutes are tapered along the length of the stalk roll.
33. (New) The separation element of said corn head row unit according to claim 31 wherein the opposing flutes edges are tapered to decrease the width of the gap between the opposing flutes edges along the length of the stalk roll.
34. (New) The separation element of said corn head row unit according to claim 33 wherein the number of opposing flutes edges increases along the length of said stalk roll from the front to the posterior of said stalk roll.
35. (New) An improved method of engaging corn plants with a corn head row unit comprising the steps of:
 - a. engaging the corn plant with a plurality of rotational elements,
 - b. pinching the corn plant between said rotational elements,
 - c. penetrating the corn plant stalk with said rotational elements a pre-determined penetration depth, wherein the pre-determined penetration depth of each of said rotational elements is less than half the diameter of the corn plant stalk,
 - d. pulling the corn plant stalk down through said corn head row unit with said rotational elements,
 - e. said penetrating, pinching and pulling steps repeatedly lacerate the corn plant stalk along its length and width thereby separating the corn plant ear from the corn plant stalk wherein the processed top portion of the corn stalk remains connected to the lower portion of the processed corn stalk.

36. (New) An improved method of engaging corn plants with a corn head row unit according to claim 38 wherein the corn plant is a feed grain corn plant.